

CLAIMS:

1. A method for printing a plurality of pixels corresponding to a digital image comprising pixels of image data, the method comprising the steps of:

5 (a) producing a stream of droplets including printing droplets having a first volume each selectively formed over a first time period and non-printing droplets having a second volume each selectively formed over a second time period, the second volume being a multiple of the first volume, the multiple being a volume discrimination ratio between printing droplets and non-printing droplets;

10 (b) forming a print command using a half toning algorithm for printing a pixel in a two-dimensional array, the pixel having a print value;

(c) determining if the print command is invalid by examining previously formed adjacent print commands;

(d) replacing an invalid print command with a valid print command resulting in a modified error value to be diffused; and

15 (e) diffusing the modified error value in accordance with the half toning algorithm.

2. A method for printing as recited in claim 1 wherein:

the diffusing step is performed one-dimensionally.

20 3. A method for printing as recited in claim 1 wherein:

the diffusing step is performed two-dimensionally.

4. A method for printing as recited in claim 1 wherein:

25 the half toning algorithm is an error diffusion algorithm..

5. A method for printing as recited in claim 1 wherein:

an invalid print command for a selected nozzle is one in which the binary print sequence is 1, 0, 1.

30 6. A method for printing as recited in claim 1 wherein:

an invalid print command for a selected nozzle is one in which the binary print sequence is a 1 followed by a number n of 0s followed by another 1 wherein n is less than the volume discrimination ratio.

- 5 7. A method for printing as recited in claim 1 wherein:
 substantially a same number of droplets are printed in a contiguous area of pixels of the digital image as would have been printed if an original sequence of pixels of image data that includes invalid print commands could have been executed.
- 10 8. A method for printing as recited in claim 4 wherein:
 the error diffusion algorithm uses input data that is scaled from 0 to 255 and produces binary output data.
- 15 9. A method for printing as recited in claim 1 further comprising the step of:
 repeating steps (a) through (e) for each of the plurality of pixels corresponding to the digital image.
10. A method of printing as recited in claim 1 further comprising the steps of:
 (a) flowing a gas at an angle with respect to the stream of droplets;
 (b) separating the droplets of the first volume from the droplets of the second volume;
 (c) collecting the droplets of the second volume; and
 (d) allowing the droplets of the first volume to contact a print media.
11. A method of printing as recited in claim 1 wherein:
 the step of producing the stream of droplets includes selectively actuating a heater at a plurality of frequencies.

12. A method of printing as recited in claim 1 further comprising the step of:
recycling the droplets of the second volume for subsequent re-use.